



## Emission Inventory Improvement Program

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### ***EIIP—The Leading Edge in Emissions Estimation***

This issue of *EIIP Update* continues the in-depth examination of the EIIP Data Management Committee (DMC). The major goal of the DMC has been to develop protocols to facilitate exchange of emissions information between data generator and data user. To accomplish this task, the committee has had to rethink, and in some cases reinvent, many basic assumptions about data element relationships and data exchange. This issue continues presenting the rationale for the approach selected for a standard data transfer format and transfer procedure. Subsequent issues will focus on the four “source” committees and the Quality Assurance Committee.

#### **Sorry For The Delay**

Those who had become accustomed to receiving the *EIIP Update* every 6 to 8 weeks may have wondered what happened to the January issue. While EIIP was in the budget for FY97 and EPA received its budget on time, the EIIP funds did not find their way to the correct “pot” until late March. We now have the money issues corrected and are back on track. Unless the messy issue of resources arise again, we should be back on schedule for new *Updates* being available every 6 to 8 weeks.

## *The Latest Developments*

### **EIIP On The Road Again**

The EIIP team has completed its second round of outreach programs to introduce the inventory community to the Emission Inventory Improvement Program. EPA Regional Offices 1, 2, and 3 hosted meetings in January and February. The EIIP team, consisting of state air agency personnel and EPA representatives, presented to attendees the program concepts, philosophies, and available material. State and local agency representatives and EPA Regional Office personnel attended the sessions.

### **No Data Delivery Funds in FY98**

During FY96 and FY97, EIIP Data Delivery funds have been available to assist state and local air agencies prepare to adopt the new data exchange protocols being developed by the Data Management Committee. These funds are to be used to develop needed software, obtain training, and assist agency personnel in implementing new procedures. For more information on the new data exchange protocols, see the November 1996 issue of *EIIP Update*, articles later in this issue, and the EIIP Home Page ([www.epa.gov/oar/oaqps/eiip](http://www.epa.gov/oar/oaqps/eiip)).

***These fund will not be available in FY98.*** Thus, it is extremely important that state and local agencies, working with their respective EPA Regional Offices, make sure that FY97 Data Delivery funds are allocated appropriately (see related discussion in the Committee Spotlight). Agencies should make every effort to obtain their share of these funds and make sure they are in a position to take advantage of the new procedures.

### **Last *EIIP Update* To Be Published**

This will be the last copy of the *Update* to be published as hard copy. Expenses associated with printing, postage, and maintaining current mailing lists are overwhelming the system. As announced previously, past issues as well as future issues will

be posted on the EIIP Home Page. To receive an E-mail notification that a new issue is available, you must register on the EIIP List Server. To register, go to EIIP Home Page ([www.epa.gov/oar/oaqps/eiip](http://www.epa.gov/oar/oaqps/eiip)), click on the “List Server” option, and follow the instructions. You will be notified when new *Updates* and any other material become available.

## **EIIP Documents on the World Wide Web**

Because of the expense of distributing EIIP documents and the need to rapidly distribute the information, the EIIP Home Page will be the primary method to disseminate the material. To ensure that documents are received in the form developed by the committees, the “pdf” format has been chosen to electronically distribute the documents. The advantage of using this format is that documents can be printed in the correct form, regardless of the printer being used. To read and print the EIIP files, the Adobe Acrobat reader must be used. The reader can be downloaded for free. The link to its location can be found on the EIIP Home Page.

For those who do not have a link to the Internet, EIIP documents are also being posted on EPA’s Office of Air Quality Planning and Standards’ Technology Transfer Network—OAQPS TTN—specifically the Clearinghouse for Inventories and Emission Factors (CHIEF) Bulletin Board System (BBS). If problems are encountered in obtaining the documents in any format, please contact the INFO CHIEF Hotline at (919) 541-5285 or E-mail “[info.chief@epamail.epa.gov](mailto:info.chief@epamail.epa.gov)”.

## **AP-42 and EIIP Documents To Be Linked**

The emission inventory community will soon have a new tool to improve their ability to compile emission estimates. The next version of the Air CHIEF CD will link current EIIP documents with appropriate sections of AP-42. For example, if someone is estimating emissions from hot-mix asphalt plants, they can go from the location in the EIIP document that discusses emission factors to the section in AP-42 that contains appropriate factors. The CD will also contain updated documents found on previous versions of the Air CHIEF CD. The projected release date is the fourth quarter of this fiscal year.

## **EIIP Documents To Be Published**

EIIP documents available on the EIIP Home Page will be published as hard copy by the end of the fiscal year. Copies will be sent to state and local air agencies and to EPA Regional Offices at no cost. Others wishing copies may purchase them from the Government Printing Office.

Because of the expense associated with printing and distributing the large amount of material contained in EIIP documents, we do not expect this printing to be replicated. Any corrections or changes to the printed text will be made electronically and be available on the EIIP Home Page. New documents will also be posted on the Home Page. Those registered on the EIIP List Server will automatically be notified when new material is available or if corrections to existing documents are posted.

## **EDI Training Now Available**

To help state and local air agencies prepare for the eventual shift to reporting emission inventory data using Electronic Data Interchange (EDI), the EIIP Data Management Committee (DMC; see Spotlight below) has arranged for a team to conduct orientation sessions. Sessions were conducted at the Aerometric Information Retrieval System (AIRS) conference and in Regions 1 and 5. State and local agency representatives interested in attending a session should contact their EPA Regional Office to request that an orientation session be scheduled. Individuals wishing to attend a session not in their regions should contact a member of the DMC to determine when sessions are scheduled.

## ***Committee Spotlight: Data Management***

The November 1996 *Update* described the work of the EIIP DMC to develop a standard data model and a standard data transfer procedure using EDI to simplify the sharing of emission inventory data without altering the existing data formats of the users. The EDI standards and how they will be implemented for the EIIP application are described in detail here. The resources that will be available to the EIIP user community for testing and implementing the DMC's recommended data transfer

procedures are also presented.

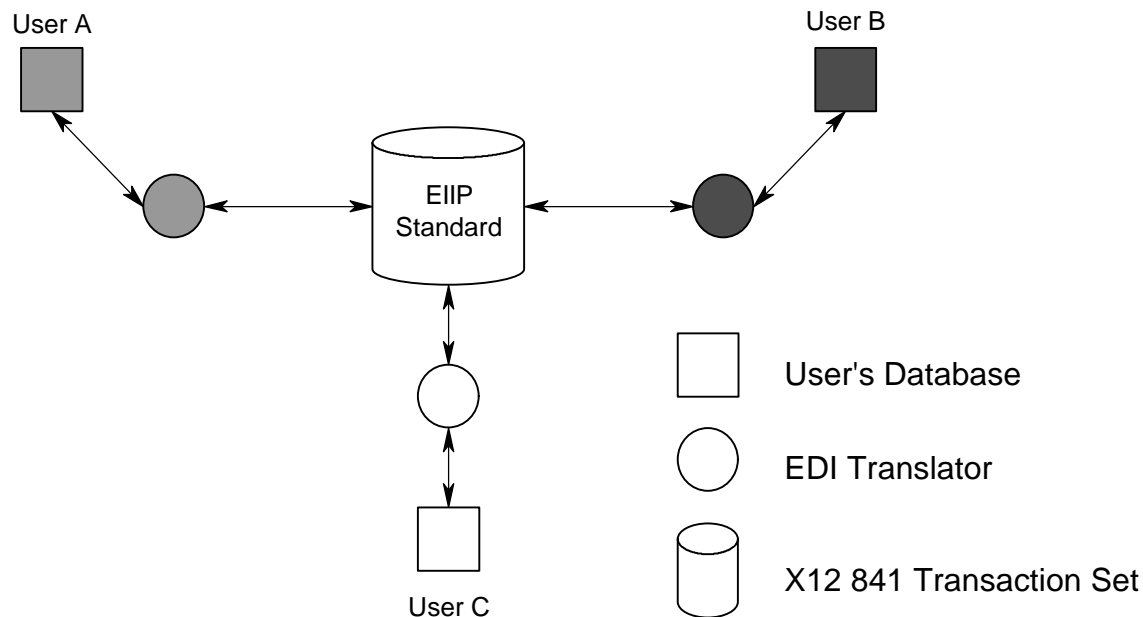
## **Using the EDI X12 Standard for EIIP Applications**

The DMC has developed related data models for point, area, mobile, and biogenic emission inventories. These standard data models guided the development of the common exchange format. This format, in the case of EDI, is called a transaction set. The EDI transaction sets are standardized, and are referred to as X12 standards after the X12 Committee of the American National Standards Institute (ANSI). The X12 standards have many transaction sets that correspond to common paper documents. For example, there are transaction sets for purchase orders, invoices, and funds transfer, to name a few. A transaction set is made up of segments arranged in a specific order. Each segment is a string of data values. Segments have specific uses. For example, there are segments just for dates and times as well as for statistics. All X12 transaction sets contain the same basic data segments, but the data segments are arranged in different orders and combinations.

For this application, the DMC chose the X12 841 transaction set because the arrangement of the data segments most closely matched the EIIP data model and its relationships. The basic 841 transaction set is a skeleton and the DMC had to add detail specific to the EIIP emission inventory application. To create an EIIP transaction set using the EDI standard 841 transaction set, each piece of data in the EIIP data model was matched with the appropriate segment in the transaction set. This matching is called mapping. The results of mapping are documented in a product called a Convention Document.

The Convention Document lists each data segment of the transaction set and describes what inventory data will be sent in that segment. The Convention Document specifies the length of fields, whether the data are mandatory or optional, and other necessary details. The Convention Document is typically included as an appendix in another document, the EDI Implementation Guideline. The Implementation Guideline specifies details such as the type of data being exchanged, the date and time the data should be sent, and where and how to send the data. These are essentially business rules that are agreed to by the trading partners.

To send and receive EDI X12 transaction sets, the user must have the Implementation Guideline and an EDI translator, which is



### Data Transfer Using the EIIP Data Transfer Format

software that converts data from the format in the user's database to the X12 transaction set format specified by the Implementation Guideline. Translators can convert both outgoing and incoming transaction sets. The data move from one user's database through a link called an application interface and then are loaded into the translator. In the translator, the data are converted into the EDI X12 transaction set and then sent, by direct computer-to-computer dial up or by disk, over a Value

Added Network or even over the Internet. The recipient receives the transaction set, which is loaded to the recipient's EDI translator. The transaction set is converted from the X12 format into a flat file format specified by the recipient. The flat file then is loaded to the recipient's database via an application interface. This process is depicted in the following figure.

This entire process can occur without human intervention. The user has the option of manually entering data into the translator instead of using the application interface and database, but this approach is less efficient. Setting up a translator and possibly an application interface, agreeing to the details in the Implementation Guideline, and choosing a data transmission method are all implementation issues. Some EIIP implementation issues are discussed below.

## Implementing EDI

Implementing the EDI X12 technology for exchange of air emissions information involves several stages of activity, as discussed in the November 1996 *Update*. Once the Implementation Guideline is prepared for the EIIP application (as described above), the DMC will conduct a prototype demonstration to test the process of using EDI X12 as a standard data transfer procedure. Peer review of the EIIP's recommended implementation of X12 transaction sets will be conducted, and finally deployment of and education on this EDI technology will follow.

The EIIP's prototype demonstration will consist of transferring emission inventory data between a state or local agency and the EPA. A prototype database is being designed using ORACLE™ software (based on the EIIP data model) and will reside at EPA for receiving the EDI-formatted data sets. The prototype demonstration is expected to help identify the hardware and software required to expand the EDI transfer procedure to the larger EIIP user community.

The EIIP standard data model and the X12 documentation will explain the DMC's implementation of this EDI technology. A large number of EDI X12 software applications are readily available for all the major brands of personal and mainframe computers. Consultants and vendors of this technology are already at work and able to provide EDI services. The X12 technology has been used for over 15 years, though primarily in the purchasing and invoice departments of larger private companies and some government sectors. Some companies and government agencies may find that X12 expertise already exists in their organization, just not in the environmental division. If state and local agencies do not now have EDI, consultants can

provide the needed services including software installation, training, translator development, and complete data exchange turn-key operations.

Another benefit of EDI is that cross-media EDI pilot projects are being funded by EPA. This means that an environmental agency or a company can ultimately use their acquired EDI abilities for other environmental data exchanges as well. All of these factors indicate that EDI will be a very valuable tool in the future of environmental agencies at the local, state, and federal level.

### **Resources Available for Implementing EIIP Data Transfer Techniques**

The EIIP DMC is developing all the necessary tools for state and local agencies and EPA to test and implement data transfer by EDI. All of the DMC products will be available on the EPA's CHIEF BBS or on the EIIP Home Page ([www.epa.gov/oar/oaqps/eiip](http://www.epa.gov/oar/oaqps/eiip)). The EIIP data model (November 1996 version) has been mailed to emission inventory contacts and AIRS contacts at most state and local air agencies. The DMC requested a review of the standard data model for compatibility with state and local emission inventory database structures. The comments received will be used to refine and finalize the EIIP data model. The value of the standard data model cannot be overemphasized. State and local agencies should now begin analyzing the EIIP data model to determine how inventory data can be extracted from their databases to match the standard.

### **DMC Products**

State and local agencies should periodically check with their EPA Regional Office contacts, the CHIEF BBS, and EIIP Home Page for the following DMC products:

- *EIIP Data Model*, November 1996 version and addenda available now and soon to be updated
- *Contractor Work Plan and Schedule for EDI Development and Prototype Demonstration*, available April 1997

- *EDI Training Opportunities*, available now
- *EDI Convention Document* (Draft Prototype Version), available May 1997
- *EDI Implementation Guideline* (Draft Prototype Version), available May 1997
- *Documentation of Prototype Demonstration with Approach Study*, available Summer 1997
- *Final EDI Implementation Guideline with Convention Document*, available Summer 1997
- *Summary Results of Prototype Demonstration*, available Fall 1997

### **Section 105 Grants and EIIP Data Delivery Funds**

Allocation of funds from Section 105 Grants are available in some regions for state and local agencies to use in testing and implementing the recommended EIIP data transfer techniques. In FY96 and FY97, Section 105 funds were provided to the EPA Regional Offices for “EIIP Data Delivery.” These funds were intended to help interested state and local agencies with the various implementation issues associated with EIIP data transfer techniques. The implementation issues include reviewing the EIIP standard data model, and programming compatibility with the data model by designing an application interface, obtaining EDI training, setting up an EDI translator, agreeing to the details in the Implementation Guideline, and choosing a data transmission method. The DMC has prepared guidance for state and local agencies and the EPA Regional Offices that identifies the basic implementation activities that should be initiated and supported by available 105 funds for EIIP Data Delivery. The DMC guidance (work plan) is now available on the CHIEF BBS and EIIP Home Page.

## ***What Do You Think?***

It has been pointed out that one of the greatest benefits of EIIP has been the communications established between committee members. While this has worked extremely well for EIIP, the rest of the inventory community has not been able to take advantage of the frequent interchanges on various topics.

Through the Public Forum facilities of the EPA Web Page, EIIP can set up an area to discuss inventory issues. Discussions can range from how to inventory a unique source, to how best to conduct a survey, to what emission factor should be used. Those with long memories will remember the discussion area on the CHIEF BBS that was mainly used to address emission factor questions. This feature is being moved to the Public Forum of the EPA Web Page.

Is there enough interest and need to expand this to cover inventory issues? What do you think? Please respond using the EIIP Home Page and let us know whether this is a service that you would use.